



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/579,593	05/26/2000	Joseph J. Danko	81329A	8869

23685 7590 07/31/2002

KRIEGSMAN & KRIEGSMAN
665 FRANKLIN STREET
FRAMINGHAM, MA 01702

EXAMINER

STOCK JR, GORDON J

ART UNIT PAPER NUMBER

2877

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/579,593

Applicant(s)

DANKO, JOSEPH J.

Examiner

Gordon J Stock

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13, 15 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-10, 19 is/are rejected.
- 7) ☒ Claim(s) 14, 16 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "61" has been used to designate both a holder for a wafer and a CCD camera. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to because it exceeds 250 words. Correction is required. See MPEP § 608.01(b).
3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. **Claims 1-3** are objected to for the following: as to **claim 1**, "the Fourier plane of the imaging lens" of line 21 lacks antecedent basis. Correction is required. As to **claim 2**, "the Fourier plane of the imaging lens" of line 1 of page 28 lacks antecedent basis. Correction is required. As to **claim 3**, "the Fourier plane of the imaging lens" of line 1 of page 29 lacks antecedent basis. Correction is required.
5. **Claim 14** is objected to for the following: "said sensor" lacks antecedent basis. Correction is required.

Art Unit: 2877

6. **Claims 16, 18, and 19** are objected to because of the following informalities: in **claim 16**, "the method of claim 14" should read "the method of claim 15." In line 17 of **claim 18**, "wafer form" should read "wafer from." In line 2 of **claim 19**, "said apparatus" should read "said method." Appropriate corrections are required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Morishige et al. (5,818,576)** in view of **Bishop (6,091,488)**.

As to **claim 19**, Morishige discloses a method for detecting the presence of contaminant particles on a patterned wafer comprising:

(a) illuminating a stripe shaped region on the semiconductor wafer with a beam of light.
(col. 6, lines 60-66).

(b) detecting at least some of the light scattered from the area illuminated but not specularly reflected light as wafer is moving using a CCD sensor (col. 6, lines 40-45).

In the embodiment of Figure 1, Morishige is silent concerning a lens; however, in Figure 4 of rotary scanning apparatus, a collector lens that collects scattering light and then received by the CCD image sensors (col. 1, lines 44-51). It would be obvious to one skilled in the art at the time the invention was made to include a collector lens in using the CCD sensor, in order to collect the scattered light and to have the CCD sensor receive the light from the collector lens.

Art Unit: 2877

Morishige is silent concerning a CCD camera in TDI mode, but he does disclose a delaying circuit (col. 8, lines 35-60). Bishop in a semiconductor wafer inspection apparatus teaches using a TDI CCD camera having a square array in order to scan at high speeds without obtaining blur (col. 6, lines 5-8; col. 7, lines 1-5). It would be obvious to one skilled in the art at the time the invention was made to use a TDI CCD camera having a square array in order to scan at high speeds without obtaining blur.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. **Claims 1-10** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **claims 1-10** of U.S. Patent Application 09/518977 (Danko). Although the conflicting claims are not identical, they are not patentably distinct from each other because **claim 1** of both applications is an apparatus claim for an apparatus for detecting the presence of contaminant particles on a semiconductor wafer having repetitive patterns comprising: means for producing two beams of light, first optical means, second optical means, an imaging detector, imaging lens, a spatial filter, and adjustable approach and incident angles. As for **claim 2** of both applications, it is an apparatus claim for an apparatus for detecting the presence of contaminant particles on a semiconductor wafer having repetitive patterns comprising: means for producing two beams of light, first optical means, second optical means, first and second beams of light striking at a first and second approach and incident angle respectively, first and second optical means including a variable angle mirror, a first and second tower, an imaging detector, an imaging lens, a spatial filter, and adjustable first and second approach and incident angles. As for **claim 3** of both applications, it is a method claim for detecting the presence of contaminant particles on a semiconductor wafer comprising: steps (a) to (i). As for **claim 4** of both applications, it is an apparatus claim for an apparatus for detecting the presence of contaminant particles on a wafer having repetitive patterns comprising: a light source adapted to produce a first and second beam of light at a first and second approach angle respectively (whereas, the approach angles are adjustable), an imaging detector, an imaging lens, and a spatial filter. As for **claim 5-10** of both applications, they are apparatus claims. As for **claim 5**, it an apparatus claim for an apparatus for detecting the presence of contaminant particles on a wafer having repetitive patterns comprising: a first tower, a second tower, an

Art Unit: 2877

imaging detector, an imaging lens, and a spatial filter. As for **claim 6** that depends from **claim 5** in both applications, it is an apparatus claim with the limitation of a first tower including a variable angle mirror. As for **claim 7** that depends from **claim 6** in both applications, it is an apparatus claim with the limitation of a second tower including a variable angle mirror. As for **claim 8** that depends from **claim 7** in both applications, it is an apparatus claim with the limitation of the second tower's variable angle mirror is independently moveable relative to the first tower's variable angle mirror. As for **claim 9** that depends from **claim 8** for both applications, it is an apparatus claim with the limitation of the first tower further comprising: a gimbal mirror, a pair of lenses, and a pair of folding mirrors. As for **claim 10** that depends from **claim 9** in both applications, it is an apparatus claim with the limitation of the second tower further comprising: a gimbal mirror, a pair of lenses, and a pair of folding mirrors.

Allowable Subject Matter

11. **Claims 11-13, 15, 17** are allowed.

As to **claims 11-13**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular stripe shaped regions illuminated on a moving wafer in an apparatus for detecting the presence of contaminant particles on a semiconductor wafer surface having repetitive patterns.

As to **claims 15 and 17**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular method for detecting the presence of contaminant particles on a moving semiconductor wafer having repetitive patterns.

Art Unit: 2877

As to **claim 19**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular method for detecting the presence of contaminant particles on a moving semiconductor wafer having repetitive patterns.

12. **Claims 14, 16, and 18** are objected to for the aforementioned reasons, but would be allowable if rewritten to make corrections.

As to **claim 14**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular stripe shaped regions illuminated on a moving wafer in an apparatus for detecting the presence of contaminant particles on a semiconductor wafer surface having repetitive patterns.

As to **claim 16**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular method for detecting the presence of contaminant particles on a moving semiconductor wafer having repetitive patterns.

As to **claim 18**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular stripe shaped regions illuminated on a moving wafer in an apparatus for detecting the presence of contaminant particles on a semiconductor wafer surface having repetitive patterns.

Conclusion

13. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 5,264,912 to Vaught et al.

Fax/Telephone Numbers

Art Unit: 2877

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

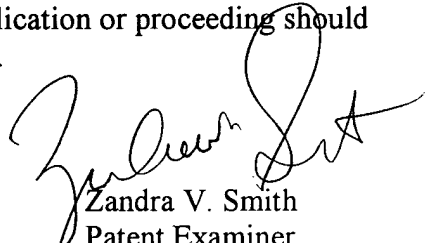
Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is:

(703) 308-7722

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 8:00 a.m. – 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gs
July 24, 2002


Zandra V. Smith
Patent Examiner
Art Unit 2877